

SUMMARY REPORT

on

DATA COLLECTION AND PREPARATION OF AUTHORITATIVE REVIEWS ON SPACE FOOD AND NUTRITION RESEARCH

Contract NAS9-11634

Period Covered: March 22, 1971 to January 22, 1972

to

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER

January 22, 1972

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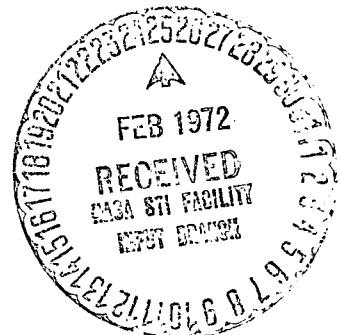
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SUMMARY

Work on this program has consisted of the collection and classification of information for a manually operated information retrieval system on the subject of Space Food and Nutrition Research. The system as it currently exists is designed for retrieval of documents, either in hard copy or on microfiche, from the technical files of the MSC Food and Nutrition Section by accession number, author, and/or subject. The system could readily be extended to include retrieval by affiliation, report and contract number, and sponsoring agency should the need arise. It can also be easily converted to computerized retrieval.

At present the information retrieval system contains nearly 3000 documents which consist of technical papers, contractors' reports, and reprints obtained from the Food and Nutrition files at MSC, the MSC Technical Library, the library at the Texas Medical Center in Houston, the BMI Technical Libraries, Dr. E. B. Truitt at BMI, and the OSU Medical Libraries.

Additional work was done during the initial contract period to compile 18 selected bibliographies on subjects of immediate interest on the MSC Food and Nutrition Section. Three technical reviews were also prepared.

DESCRIPTION OF THE INFORMATION RETRIEVAL SYSTEM

Information Cards

The system identifies each document by an accession number, which is written on the cover or first page of the document. The document is described by 15 information entries on a 5-in x 8-in. information card prepared for each document. The entries are as follows:

- (1) Accession No.
- (2) Date of Entry
- (3) Title
- (4) Author(s)
- (5) Affiliation(s)
- (6) Address(es)
- (7) Contract No.
- (8) Sponsoring Agency
- (9) Document No(s).
- (10) Date of Information
- (11) Source
- (12) No. of References
- (13) Availability
- (14) Topic Tags
- (15) Abstract or Annotation

Both these cards and the documents held in the Food and Nutrition files at MSC are filed in numerical sequence of the accession number. A reproduction of the information cards for Accession Nos. 6 and 7 is shown as an example in Appendix A.

Another set of these cards has been prepared and filed by author to facilitate retrieval in instances where information published by specific author(s) is desired.

Topic Tag

For the nearly 3000 documents processed, over 1000 topic tags have been selected to identify the pertinent subject matter in these documents. An

8-12" x 11-1/2" reference card having 10 columns numbered from 1 through 0 has been prepared for each of the more than 1000 topic tags. The accession numbers of documents identified by a certain topic tag are entered in the numbered column of that topic tag card corresponding to the last digit of the accession number. An example of the card for the topic tag "Life Support" is shown in Appendix A.

The topic cards are filed alphabetically, and can be used for both broad and refined searches depending on the nature of the problem requiring the search. For example, one can obtain information on the general topic of metabolism by pulling the documents identified by accession number on the "Metabolism" topic tag card; or he can get information pertaining to specific metabolism, such as metabolism of fats, proteins, carbohydrates, etc., by pulling only those documents identified by accession number on both the "metabolism" and "fat", "protein", or "carbohydrate" topic tag cards. The search could be further refined to find only those documents which describe studies made with human subjects by finding the matching accession numbers on the "Human Studies" topic tag card. The searches could thus be conducted manually in much the same manner as are those performed by a computer.

The NASA/MSC monitor will be provided with four sets each of the accession number file, author file and topic tag file.

PREPARATION OF BIBLIOGRAPHIES AND REVIEWS

Special searches were made and bibliographies were prepared to provide quick reference information on topics of current interest to members of the MSC Food and Nutrition Section. Topics of these searches were:

- (1) Fluid flow under zero-G as it pertains to food and feeding.
- (2) In-suit feeding of astronauts, mechanics of feeding.
- (3) Nutrient needs during high level activity; energy and nutritional requirements for EVA on the lunar surface during the Apollo 15 mission.
- (4) Effects of alcohol on metabolism; mineral metabolism, excretion of antidiuretic hormones, exercise physiology and cardiovascular responses for Skylab.

- (5) Mercury in dental science with emphasis on its effects on the patient; mercury in saliva.
- (6) General reviews on nutrition in space.
- (7) Storage life of meats (fresh) and other foods in a concentrated CO₂ atmosphere.
- (8) Gastroenterology; physiological indicators of intestinal absorption found in fecal matter.
- (9) Analysis of fecal matter.
- (10) "Penguin" gas suits used by the Russians to prevent loss of bone calcium
- (11) Direct methods of bone mineral measurement.
- (12) Nutritional support of man in space.
- (13) Space food clean room technology and its application in the candy industry.
- (14) Nutritional and metabolic requirements for prolonged stay in space and their application to feeding underprivileged nations.
- (15) Induced potassium deficiency and physical exercise.
- (16) Addendum - Induced potassium deficiency and physical exercise.
- (17) Canine and feline nutrition.
- (18) Soviet studies pertaining to space food and nutrition.

The bibliographies for searches (16), (17), and (18) are included in Appendix B of this report.

Pertinent literature references for all of the 18 topics were obtained from the MSC Food and Nutrition Technical Reference File, MSC Technical Library, The Texas Medical Center Library in Houston, BMI files and technical libraries in Columbus, The Ohio State University Medical Center Libraries and through interlibrary loan. These are on file at MSC in the Space Food and Nutrition Information Retrieval System.

Technical reviews were also prepared on the subjects: "A Comparative Study of Two Direct Methods of Bone Mineral Measurement", "Can Space Food Clean Room Technology Help the Candy Industry?", and "Nutritional Support of Man in Space".

APPENDIX A

SAMPLES OF ACCESSION CARDS AND TOPIC TAG CARDS
IN THE INFORMATION RETRIEVAL SYSTEM

ACCESSION NO: 0006 DATE OF ENTRY: 03 May 71
TITLE: Continuous Scintillation Counting of Amino Acid Analyzer Column Eluates
AUTHOR: David H. Elwyn
AFFILIATION: Department of Surgical Research, Michael Reese Hospital and Medical Center
ADDRESS: Chicago, Illinois
CONTRACT NO: American Heart Association Grant 61G82; U. S. Public Health Service Grant AM03716
SPONSORING AGENCY: American Heart Association, U. S. Public Health Service, Charles H. and Rachel M. Schwab Memorial Foundation
DATE OF INFORMATION: November, 1963
SOURCE: Advances in Tracer Methods, 1964, Vol 2, pp 115-122
NO. OF REFS: 8 AVAILABILITY: MSC/Tech. Ref. File
TOPIC TAGS: Amino acid, scintillation counter, chromatography

ABSTRACT OR ANNOTATION: Automatic counting equipment.

ACCESSION NO: 0007 DATE OF ENTRY: 03 May 71
TITLE: Synthesis of a Sulfur-Containing Amino Acid Under Simulated Prebiotic Conditions
AUTHORS: Gary Steinman (1), Adolph E. Smith (2), and Joseph J. Silver (2)
AFFILIATIONS: (1) Department of Biochemistry, Pennsylvania State University; (2) Physics Department, Sir George Williams University
ADDRESSES: (1) University Park, Pennsylvania 16802; (2) Montreal, Canada
REPORT NO: A68-22359
DATE OF INFORMATION: 15 Jan 1968
SOURCE: Science, 1968, Vol 159, pp 1108-1109
NO. OF REFS: 11 AVAILABILITY: MSC/Tech. Ref. File
TOPIC TAGS: Amino acid, methionine, ultraviolet irradiation, chemical synthesis

ABSTRACT OR ANNOTATION: Ultraviolet irradiation of an aqueous solution of ammonium thiocyanate produces the sulfur-containing amino acid methionine. Synthesis of this class of biocompound fills another important gap in the development of an overall picture of how prebiological chemistry may have evolved on primitive earth.

[illegible]

APPENDIX B

REFERENCE LISTS FOR SPECIAL SEARCHES MADE AFTER
SUBMISSION OF THE SECOND QUARTERLY REPORT

CANINE AND FELINE NUTRITION

Abell, L. L.; Mosbach, E. H., "Effect of Methyltestosterone on the Serum Cholesterol Pattern of Dogs Maintained on Semisynthetic Diets", 17th Annual Meeting of the American Heart Association Council on Arteriosclerosis, 1963. *Circulation* 28 (4 Pt. 2): 647, 1963, Abstract only.

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ADDENDUM

INDUCED POTASSIUM DEFICIENCY AND PHYSICAL EXERCISE

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